‘Hypertexting’ a library’s disaster control plan

This item was submitted to Loughborough University’s Institutional Repository by the/an author.

Additional Information:

• A Master’s Dissertation, submitted in partial fulfilment of the requirements of the award of the Master Of Science degree of Loughborough University.

Metadata Record: https://dspace.lboro.ac.uk/2134/10333

Publisher: © E.J. Blagg

Please cite the published version.
This item was submitted to Loughborough University as a Masters thesis by the author and is made available in the Institutional Repository (https://dspace.lboro.ac.uk/) under the following Creative Commons Licence conditions.

Attribution-NonCommercial-NoDerivs 2.5

You are free:

- to copy, distribute, display, and perform the work

Under the following conditions:

**By:** You must attribute the work in the manner specified by the author or licensor.

**Noncommercial:** You may not use this work for commercial purposes.

**No Derivative Works:** You may not alter, transform, or build upon this work.

- For any reuse or distribution, you must make clear to others the license terms of this work.
- Any of these conditions can be waived if you get permission from the copyright holder.

Your fair use and other rights are in no way affected by the above.

This is a human-readable summary of the Legal Code (the full licence).

For the full text of this licence, please go to:

http://creativecommons.org/licenses/by-nc-nd/2.5/
'Hypertexting' a Library's Disaster Control Plan

By

Emma J. Blagg, BSc. (Hons)

A Master's Dissertation, submitted in partial fulfilment of the requirements of the award of the Master Of Science degree of the Loughborough University.

September 1996

Supervisors: Graham Matthews, BA, DipLib, ALA.
Department of Information and Library Studies

Alan Poulter, MA, MSc, ALA.
Department of Information and Library Studies

© E.J. Blagg, 1996
Abstract

This dissertation documents the development of a prototype hypertext disaster control plan for the Pilkington library at Loughborough University and evaluates the feasibility of its application. The literature concerning disaster control planning is reviewed: the objectives and contents of a disaster control plan are considered, as are other aspects of disaster control planning such as staff training. The literature on hypertext is discussed and includes a history of hypertext, and a summary of the main issues: non-linearity, navigation, learning, information storage and retrieval, and the structure of the document. Aspects of HyperText Markup Language (HTML) and the World Wide Web (WWW) are considered and include a brief history and the advantages and disadvantages of HTML.

The finished prototype contains material gathered from a variety of sources including: existing documentation, liaison and interviews with library staff and the literature on disaster control planning and hypertext. Practical issues involved in in the development of the prototype, 'Pilkplan' are considered. The evaluation of Pilkplan by some of the Pilkington library's staff, and students at the Department of Information and Library Studies at Loughborough University is discussed. Topics covered include: navigation, information retrieval, the use of floorplans in the form of image maps, paper versus hypertext and the content of Pilkplan.

Recommendations for further development are made. Together with the evaluation, they show that it is possible to create a hypertext disaster control plan using HTML. A hypertext plan has some advantages over a paper-based equivalent, for example, it allows textual information to be linked to image maps and there is also more potential for staff training.

A disc containing Pilkplan accompanies this dissertation.
Abstract

This dissertation documents the development of a prototype hypertext disaster control plan for the Pilkington library at Loughborough University and evaluates the feasibility of its application. The literature concerning disaster control planning is reviewed: the objectives and contents of a disaster control plan are considered, as are other aspects of disaster control planning such as staff training. The literature on hypertext is discussed and includes a history of hypertext, and a summary of the main issues: non-linearity, navigation, learning, information storage and retrieval, and the structure of the document. Aspects of HyperText Markup Language (HTML) and the World Wide Web (WWW) are considered and include a brief history and the advantages and disadvantages of HTML.

The finished prototype contains material gathered from a variety of sources including: existing documentation, liaison and interviews with library staff and the literature on disaster control planning and hypertext. Practical issues involved in the development of the prototype, 'Pilkplan' are considered. The evaluation of Pilkplan by some of the Pilkington library's staff, and students at the Department of Information and Library Studies at Loughborough University is discussed. Topics covered include: navigation, information retrieval, the use of floorplans in the form of image maps, paper versus hypertext and the content of Pilkplan.

Recommendations for further development are made. Together with the evaluation, they show that it is possible to create a hypertext disaster control plan using HTML. A hypertext plan has some advantages over a paper-based equivalent, for example, it allows textual information to be linked to image maps and there is also more potential for staff training.

A disc containing Pilkplan accompanies this dissertation.
Acknowledgements

I would like to thank the following people:

• My supervisors, Graham Matthews and Alan Poulter, for their help and support throughout the course of this dissertation. More specifically, Graham for his enthusiasm and encouragement and Alan for his technical help.

• John Arfield, the Librarian, for giving permission for his staff to be involved in the development and evaluation of Pilkplan, and for giving me permission to use the internal library documentation.

• Marion Shields, for providing me with useful information throughout the course of this project, and giving me helpful advice and ideas about the development of Pilkplan.

• Goff Sargent, Computer Officer, for his technical help throughout the course of this dissertation, especially with the image map.

• Gary Brewerton, Systems Analyst, who, using an image I had scanned in, created the .gif files containing the floorplans.

• All the library staff I interviewed for this dissertation.

• The staff and students who took the time to evaluate Pilkplan.

• My parents, without whom none of this would have been possible.
# Table of Contents

## Chapter One
**Introduction**

<table>
<thead>
<tr>
<th>Section</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1</td>
<td>Aims</td>
<td>1</td>
</tr>
<tr>
<td>1.2</td>
<td>Objectives</td>
<td>2</td>
</tr>
<tr>
<td>1.3</td>
<td>Background</td>
<td>3</td>
</tr>
<tr>
<td>1.4</td>
<td>Methodology</td>
<td>4</td>
</tr>
<tr>
<td>1.5</td>
<td>Notes and References</td>
<td>5</td>
</tr>
</tbody>
</table>

## Chapter Two
**Disaster Control Planning**

<table>
<thead>
<tr>
<th>Section</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.1</td>
<td>An Overview of Disaster Control Planning</td>
<td>6</td>
</tr>
<tr>
<td>2.2</td>
<td>Why Are Disaster Control Plans Needed</td>
<td>8</td>
</tr>
<tr>
<td>2.3</td>
<td>Objectives of a Disaster Control Plan</td>
<td>8</td>
</tr>
<tr>
<td>2.4</td>
<td>Contents of a Disaster Control Plan</td>
<td>9</td>
</tr>
<tr>
<td>2.4.1</td>
<td>Prevention</td>
<td>9</td>
</tr>
<tr>
<td>2.4.2</td>
<td>Preparedness</td>
<td>11</td>
</tr>
<tr>
<td>2.4.3</td>
<td>Reaction</td>
<td>16</td>
</tr>
<tr>
<td>2.4.4</td>
<td>Recovery</td>
<td>19</td>
</tr>
<tr>
<td>2.4.5</td>
<td>Other Aspects of Disaster Control Planning</td>
<td>20</td>
</tr>
<tr>
<td>2.5</td>
<td>Conclusion</td>
<td>21</td>
</tr>
<tr>
<td>2.6</td>
<td>Notes and References</td>
<td>22</td>
</tr>
</tbody>
</table>

## Chapter Three
**HTML, Hypertext and the World WideWeb**

<table>
<thead>
<tr>
<th>Section</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.1</td>
<td>Introduction</td>
<td>26</td>
</tr>
<tr>
<td>3.1.1</td>
<td>What is Hypertext?</td>
<td>26</td>
</tr>
</tbody>
</table>
3.1.2 A Brief History of Hypertext

3.1.3 The Importance of Hypertext

3.2 Issues in Hypertext

3.2.1 Non-Linearity

3.2.2 Navigation and Hypertext

3.2.3 Hypertext and Learning

3.2.4 Information Storage and Retrieval

3.2.5 Structure of the Document

3.3 HTML and the World Wide Web

3.3.1 A Brief History

3.3.2 What is HTML?

3.3.3 Limitations of HTML

3.3.4 Advantages of HTML

3.4 Conclusion

3.5 Notes and References

Chapter Four Development of Pilkplan

4.1 Existing Documentation

4.2 Disaster Control Planning Information

4.3 Learning HTML

4.4 Designing Pilkplan

4.4.1 Pilkplan Homepage (index.htm)

4.4.2 Disaster Prevention (prevent.htm)

4.4.3 Disaster Preparedness (prepare.htm)

4.4.4 Disaster Reaction (react.htm)

4.4.5 Disaster Recovery (recover.htm)

4.4.6 Disaster Recovery Handbook (handbook.htm)

4.4.7 Fire and Emergencies Manual (fireman.htm)

4.4.8 Sources of Further Information (further.htm)

4.4.9 Pilkplan Information (pilkinfo.htm)
4.4.10 Level 3 of the Pilkington Library (map1.htm) and the Larger “Clickable” Map (map2.htm)  
4.4.11 Disaster Team Instructions (instruct.htm)  
4.4.12 Sample Damage/Discard Sheet (damage.htm)  
4.5 Notes and References

Chapter Five  Evaluation

5.1 Navigation  
5.2 Information Retrieval  
5.3 Floorplans  
5.4 Hypertext v Paper  
5.5 Content  
5.6 Presentation  
5.7 Notes and References

Chapter Six  Recommendations for Further Development of Pilkplan

6.1 Creating a Search Engine  
6.2 Including 'mailto' tags  
6.3 Using the 'form' Element  
6.4 Extending Sources of Further Information  
6.5 Restructuring of Information  
6.6 Changing the Contents Page  
6.7 Increasing the Amount of Graphics  
6.8 Developing the Floorplans  
6.9 Using More HTML tags  
6.10 Updating Pilkplan  
6.11 Notes and References
Chapter Seven  Conclusions

7.1  Staff Training  66
7.2  Information Management  67
7.3  Information Storage and Retrieval  67
7.4  Usefulness of Pilkplan  67
7.5  Finally  68

Bibliography

Disaster Control Planning  70
Hypertext and HTML  73

Appendices

Appendix A  How to View Pilkplan
Appendix B  The Files and Links in Pilkplan
Appendix C  Sample Interviews
Appendix D  Sample Evaluation Form
Appendix E  Useful HTML Web sites
Chapter One - Introduction

1.1 Aims
The purpose of this dissertation is to assess the viability and usefulness of putting a disaster control plan into a hypertext form. The aim was to create a hypertext structure which would link together, in a meaningful and easy to use way, all aspects of a disaster control plan.

This project was undertaken in collaboration with the Pilkington Library at Loughborough University. It was hoped that using hypertext would create a structured, easily accessible information resource. The resulting hypertext system is called "Pilkplan".

1.2 Objectives
The objectives of this dissertation are:
• To consider key aspects of disaster management.
• To become familiar with hypertext and HTML and their advantages and problems.
• To become familiar with the Pilkington disaster control plan.
• To put the plan into hypertext.
• To assess the value and usefulness of the hypertext version.

1.3 Background
A disaster has been defined as:
"an event which is wholly unexpected and damages, or seriously threatens to damage, the collections of an institution" (1).

A disaster control planning has been defined as:

"the term used to describe the countermeasures which can be on a large or small scale according to the needs, ability or financial resources of a library" (2).

A disaster control plan is therefore the written documentation which records these countermeasures.

There are four well established identifiable main parts of a disaster control plan: prevention, preparedness, reaction and recovery which will be discussed in more detail in Chapter Two. These sections contain material which overlaps with other sections and can result in repetition throughout a document, hypertext links would therefore be useful in order to minimise this. In addition, plans are often accompanied by a variety of other sources of information such as sample disaster sheets and floor plans which would be more easily referred to in a hypertext document.

The creation of a disaster control plan can often take a "back seat" whilst other more urgent work is carried out. By its very nature a disaster control plan will not become urgent until a disaster occurs, by which time it will be too late. Another problem is that "too often contingency plans are ring-binders that gather dust in some bottom drawer" (3). It was hoped that by using hypertext, awareness of both the plan's importance and existence would be raised particularly if it could be made available on the library server. Problems were foreseen in the usefulness of a disaster control plan which is only viewable with a web browser on a PC.

The amount of information that many disaster control plans contain can inhibit their use. It was hoped that the plan would be more interesting and easy to browse in a
hypertext form. It was also anticipated that using hypertext would aid in the planning process by helping to provide a clear structure to work around.

The use of a hypertext resource in training was considered. Staff could more easily “dip into” the hypertext version to find information of interest and relevance to themselves. The value of the resource could be increased if the plan was networked allowing staff to access it at all times for reference.

A disaster control plan must contain up to date information, particularly about staff responsibilities and contact details. A hypertext version would be easier and more cost effective to update as it would not require re-printing.

It was decided to use HTML (HyperText Markup Language) to create the plan. HTML is based on SGML (the Standard Generalized Markup Language), which describes the structure of documents. HTML and the more general area of hypertext are discussed in more detail in Chapter Three. HTML focuses on the content of the document rather than its appearance. It was hoped that this emphasis on structure would help to organise Pilkplan. HTML is also very simple to learn:

"HTML...is an especially small and simple-to-learn markup language. There are very few tags to memorize, and there are simple editors that can even insert HTML tags into text for you" (4).

In this case an editor has not been used as the tags required are so simple. The simplicity of HTML means it is easy to change the appearance of a document which makes the creation and editing of documents very quick.

HTML files are small and so can be transferred over the Internet, or viewed locally, very quickly. Formatting and font information would slow down the time it would take to load and display the document (5). Another advantage of HTML is that images can be included with text. This is useful for adding explanations and instructions for users.
1.4 Methodology

Initially a literature review was undertaken to establish recommended guidelines for the contents of a disaster control plan and to look at ways of designing HTML, and hypertext documents in general.

A series of informal interviews has been carried out with the Pilkington Library's disaster control plan coordinator, Marion Shields, Executive Assistant. In order to liaise as closely as possible, these have continued throughout the course of this project.

The creation of a hypertext version involved combining documentation already written by library staff, with guidance given in the literature. A series of semi-structured interviews (see Appendix C for sample interviews) have taken place with members of library staff with responsibility for different areas of stock:

- Simon Tanner, Library Systems Manager, for the computer systems.
- Mary Morley, Sub Librarian, for the general bookstock.
- Jenny Clark, University Archivist, for the University Archive.
- David Lewis, Cataloguing Manager, for Special Collections.

The evaluation of the hypertext version was carried out by making copies of "Pilkplan" available to members of staff and asking them to fill in an short evaluation form (see Appendix D) consisting of factual questions and a questionnaire.
1.5 Notes and References


2. Ibid., p. 42.


5. Ibid, p.52.
2.1 An Overview of Disaster Control Planning

A disaster is "an occurrence that causes death or destruction" (1). Disasters in libraries have many causes, both natural and man-made. These vary from the dramatic: arson, lightning and earthquakes to the mundane: electrical faults and burst pipes. In spite of the implication a disaster does not have to be big to be disastrous. A small leak from a pipe in the wrong place can have a big effect on the library's stock and its provision of services.

"A small event in the wrong place at the wrong time can be as potentially damaging as a large one" (2).

Disasters cannot be completely controlled or prepared for but it is possible to prevent some of them, reduce the effects of others and minimise damage to affected stock and get services back to normal. In order to do this effectively it is necessary to draw up a Disaster Control Plan which documents counter disaster measures.

Disaster Control Planning has not been a major concern in British academic libraries until relatively recently. Indeed, a study carried out in 1985 showed that only 6.6% of libraries had a Disaster Control Plan (3). In 1993 37% of academic libraries had a Disaster Control Plan, written or otherwise, (4) and in 1994 a questionnaire survey of academic libraries showed that nearly 40% had a Disaster Control Plan and nearly 50% had a member of staff responsible for Disaster Control Planning (5). These figures illustrate the increased importance of Disaster Control Planning. Figures for special and public libraries are lower, showing the importance that academic libraries place on disaster control.
There are many reasons cited in the literature as being responsible for the increased importance of Disaster Control Planning. Perhaps the most obvious is the publicity surrounding major library disasters (6). The most famous is that of the flooding in Florence in November 1966. The level of the river Arno rose 16 feet and swept through the city at 40 miles per hour. Amongst the buildings affected were museums, art galleries and libraries. Much of Italy's heritage material was damaged or completely destroyed. So devastating was this disaster that it has been viewed as the event which "ultimately changed the attitude of many librarians around the world" (7).

More recently in the mid and late 1980s a series of large-scale disasters occurred. These included Butler's account of the fire caused by arson which burned for 8 hours at the Los Angeles Public Library (8) and the fire at the Academy of Sciences Library in Leningrad, as it was then, where many books were damaged by water pumped into the building to distinguish the fire (9). In both cases many hundreds of thousands of books were damaged or destroyed.

Another factor involved in the increased importance of Disaster Control Planning is that of insurance. Insurance premiums are currently high (10) and conditions attached to policies have forced many institutions to re-examine their arrangements on fire prevention, security and contingency planning (11, 12). Also cited is the need to comply with British and European health and safety legislation (13).

The relatively high chance a librarian has of participating in a disaster must also be a factor. Figures for the United States show that research libraries experience an average of 3 major fire or water disasters every year. Extrapolated, these figures suggest that every one of these libraries has a 1% chance of a major disaster every year and a librarian during a 40 year career has a 2 in 5 chance of participating in a major disaster (14). There is no reason to suppose that figures for Britain would be any different.

It is interesting that Disaster Control Planning is not part of a more comprehensive preservation policy. This is likely to be due in part to the media coverage of the disasters mentioned above but also to the production of authoritative publications from
the National Library of Scotland (15) and the British Library (16). A more recent
guide for compiling a Disaster Control Plan is ASLIB's *Disaster Planning for Library
and Information Services* (17). Disaster control Plans are also the most general aspect
of a preservation policy, the issues affect all libraries and indeed public buildings (18).
A recent publication contains disaster control plans from seven academic libraries and
a variety of useful articles (19). Published this year is a comprehensive study
investigating disaster management in British libraries (20).

The fact that after a disaster has occurred books can actually be salvaged is also
important. Books are fairly difficult to burn because of the density of the paper sheets
in the text block (21). If books were completely destroyed there would be no point
trying to salvage anything and whole sections of a Disaster Control Plan would not
be required.

2.2 Why Are Disaster Control Plans Needed?

There are many reasons why an organisation should have a Disaster Control Plan. 
These include:

- Arrangements can be made before any incident and they can be thought
  through to ensure a swift and effective reaction. In a disaster deterioration of
  items can occur rapidly, a quick reaction will minimise this.
- The production of a formal plan should help to convince management that a
  plan is necessary and needs adequate resourcing to minimise the effects on the
  whole organisation.
- The presence of a plan with detailed procedures will help reinforce the
  importance of the whole issue of Disaster Control Planning to all members of
  staff. The written plan will also be useful in training.

2.3 Objectives of a Disaster Control Plan

The objectives of any Disaster Control Plan should be:
1) To prevent the event occurring,
2) To protect material should the event occur,
3) To salvage damaged material with sufficient speed and efficiency so that its condition can be stabilised (22).

2.4 Contents of a Disaster Control Plan

As mentioned in Chapter 1 a Disaster control plan should have 4 main elements: prevention, preparedness, reaction and recovery.

2.4.1 Prevention

Identifying Threats

The first stage in prevention is identifying potential threats to the library, assessing the risks and acting to reduce them where possible. Threats from outside the library such as earthquakes, floods and bombs should also be considered. These will include water tanks and pipes, fire suppression systems, air conditioning and toilets. Less obviously, if other departments share the same building, they should also be assessed for risks. Weaknesses in the design of the building are also important; windows, skylights, basements, gutters, roofs and drains.

Security

Security is important in disaster prevention; "prevention begins with the security of the building" (23). Many incidents result from break-ins involving arson and vandalism. Surveillance systems and security guards should also be considered (24). There are detailed lists of general security measures in the literature too long to consider here, but which can be useful (25, 26, 27). They include things such as controlling the number of people with keys to the building, window and door locks, nightly (and daytime) locking of all rooms which contain computer equipment and other items of value including book stock.
Fire

The fire risk can be reduced initially by liaising with local fire services which can help all concerned to understand the problems and special requirements of responding to an alarm (28). Buildings should have some form of fire detection system triggered by either smoke or heat detectors. Opinion is divided on whether or not sprinkler systems should be used. In the past McIntyre (29) preferred to rely on rapid compartmentalisation of the building to stop the fire spreading and would only consider installing a sprinkler system if the response from the fire services was likely to be delayed. More recently he has changed his viewpoint:

"the installation of a sprinkler system is the only way to extinguish a fire before it can reach a size when it will begin the process of collapse" (30).

Others such as Ashman suggest that sprinkler systems can be used if they have "highly localised controls" (31). Gaseous extinguishing systems are available for special collections but these are more expensive. Guidelines on fire precautions are available (32).

Water

"Water destroys tapes and discs, washes ink from paper and turns microfilm to jelly" (33).

Water often becomes involved in disaster situations as it is used to extinguish fires. In the fire at the USSR Academy of Sciences Library over 3 and a half million items were damages by water pumped into the building to control the fire (34). Even if water does not come into contact with material it can increase the relative humidity to high enough levels to allow mould growth. Flood precautions should include:

- Placing records as far away as possible from water mains and drainage pipes.
- Roofs should not be flat or leaking.
- Regular checks should be carried out on air conditioning, toilets, water tanks, gutters and down pipes (35).
Staff Awareness

"The best disaster prevention will always come from the staff" (36).

Staff have a good knowledge of, and daily familiarity with, their records and environment so will be the first to notice problems. Staff should be given clear guidelines on what to look out for and to whom they should report problems.

Liaison with Other Departments

The importance of liaising with other departments both inside and outside of the organisation has been stressed (37). Liaison has 2 major benefits. Firstly the emergency services may be able to offer help and advice on matters of security and health and safety. Secondly liaison will inform the fire brigade of the requirements of a library in an emergency situation.

One library felt that prevention fell outside of the library’s area of responsibility (38). Certainly aspects such as building inspections and maintenance do fall outside their remit but areas such as fire safety, security and staff awareness affect all departments of an organisation. Precautions such as making sure records are not placed near possible sources of flooding can only be carried out by the library involved.

2.42 Preparedness

"Preparedness is accepting that all that has been guarded against may happen and being ready to respond" (39).

A library or information service should be capable of reacting in an organised way.

Drawing Up a Plan

A detailed, written plan should be drawn up. It should identify areas of particular concern and within these areas, priorities for salvage. A retention/conservation/replacement policy should be drawn up. Clear guidelines are important in a disaster situation to ensure that correct decisions are made quickly.
There are a series of recommendations that are useful when setting priorities:

- Can the item be replaced? At what cost? Cost should include staff time spent ordering and processing.
- Is the cost of replacement more or less than the cost of conserving the item?
- How important is the item to the collection?
- Is the item available elsewhere? (40)

Floorplans are often useful. They can show the location of priority material, fire extinguishers and points where electricity, water and gas can be turned off. Flow charts are easier to follow than text and should be included. They are particularly helpful in detailing procedures for salvage.

It is also worthwhile compiling a handbook. This should be concise and comprehensive and cover all essential disaster information. Ashman (41) recommends preparing two editions of the handbook, one for general circulation and another for limited circulation which contains information such as home phone numbers of members of staff.

**Key Personnel**

A list of key personnel should be provided. Disasters often occur out-of-hours and so a call-out list of home addresses and phone numbers should be compiled. For security this should be contained in a version of the handbook that has limited circulation. There should be clearly defined responsibilities for each member of staff. It is important that only one person is in charge of the disaster situation as more problems can be caused by staff acting in conflict with one another. Manchester Metropolitan University have produced clearly outlined responsibilities for all the posts designated (42). They appointed the Deputy Librarian as Disaster Officer who would have overall responsibility for the situation. The Disaster Officer was responsible for liaising with the emergency services, assessing the damage, obtaining the necessary resources and co-ordinating staff. Next in the hierarchy came senior members of staff who were salvage officers. They were responsible for calling out team members, setting up a work area and supervising the salvage operation. Team
members were responsible for protecting undamaged stock and removing and sorting material from the disaster area. These roles are applicable to almost all libraries, there are also other areas which need to be addressed, especially in a larger organisation. Most important is some kind of emergency planning committee. It should include:

"the head of administration with responsibility for staff and buildings, someone with broad collection management responsibility, someone with overall responsibility for computer systems and an external adviser with experience of disaster planning" (43).

The selection of members of staff with these responsibilities is often decided by using the first person who volunteers. It is worth considering that not all members of staff will be equally useful in a disaster situation! McIntyre states that organisations with large numbers of staff

"may have among them willing but not very suitable people in a crisis. People involved in a disaster response need to be fit, have a measure of manual dexterity and be able to work to strict guidelines in an emergency" (44).

They should also live within a reasonable distance from the library (45).

Liaison With Suppliers
A directory of services and local suppliers should be considered. The following should be included:
Blast freezing and cold storage: Ashman recommends including as many local facilities as possible, even frozen food retailers (46)!
Equipment hire and transport services: Items should include crates, dehumidifiers, fans, pumps, generators and emergency lighting.
Freeze or vacuum drying facilities.
Film processors to treat flood-damaged microfilm.
Disaster recovery companies. If book salvage is offered check that the restorers have
training from the Camberwell School of Art and Crafts in Library and Archive Preservation otherwise “they are a firm of cowboys” (47).

In-House Equipment
Some equipment and supplies should be held by the library. The exact details of what should be held vary widely within the literature. What should be purchased and what hired is also a consideration. Purchasing equipment such as dehumidifiers, water pumps and lighting systems is expensive and if there are a number of organisations in the local area with similar requirements then it may be worth pooling resources. This brings with it logistical problems such as finding a central storage location to which all the organisations have access. It may be more cost effective to rely on being able to hire equipment. Basic supplies should be purchased including:

- Protective clothing
- Polythene sheets
- Mops and buckets
- Plastic bags
- Clean newsprint
- Scissors
- Bulldog clips
- String
- Clipboards
- Pens and pencils
- Mobile telephones

Many authors (e.g. 48, 49) recommend keeping these supplies in plastic disaster trolleys.

Staff Training
Staff training is a very important issue in Disaster Control Planning. “How staff can help to avoid, cope with and recover from a disaster are all acknowledged to be crucial elements of an effective disaster management strategy” (50). Training should give all members of staff a clear idea of what to expect in a variety of disaster
scenarios and how they should react to them. Training should allow for questions and feedback on all aspects of disaster management.

Obviously not all staff will be involved in disaster response and so training should be targeted and tailored to individual as well as group requirements. Training should begin with the person responsible for writing the Disaster Control Plan. Some information should be limited to designated staff for security reasons. Such information includes how to disable the security system, the location of valuable items and personal details of members of staff.

Of particular importance is the training that new members of staff receive. Disaster management should form part of the general induction process. Training should include the following aspects of disaster control planning:

• **Prevention**
  All staff should be vigilant at all times and should be aware of procedures for reporting faults. Some staff may need knowledge of risk assessment and liaison with insurers and emergency services. Ashman offers useful guidelines (51).

• **Preparedness**
  All staff should be trained in the use of safety equipment. They should also know the location of any supplies in disaster bins or trolleys. Preparedness is an area where training should be targeted according to the designated role of each member of staff in a disaster.

• **Reaction**
  All staff should know how to react in a disaster; getting people out of the building should be the first priority. Staff who are going to be directly involved in the disaster reaction will require additional training in the use of the equipment listed above.

• **Recovery**
  Training will be aimed mainly at managers and people with specialist skills such as Archivists. Managers should be aware of the importance of business continuity and client/user access and how best to achieve them.

The actual method of delivery of training will vary between organisations. The more
interactive methods include brainstorming, which is useful in the planning stages, practical exercises and practice runs. These last two can be expensive but valuable. For example one practice run where staff had to work in a darkened building highlighted the need for a “one-way system” to stop them bumping into each other (52). Less expensive are demonstrations of fire safety equipment and building tours to familiarise staff with evacuation routes and the location of fire extinguishers.

“Written disaster control plans and floorplans can be used as the basis for many training sessions” (53).

Many other visual aids can be incorporated into training. These include flow charts, videos, slides and photographs. Damaged materials may be used in practical sessions. Matthews and Eden recommend that an up-to-date training record is kept for every member of staff (54). There are a lot of useful documents available including guidelines on how to write disaster control plans (55, 56) and accounts of coping with disasters (57, 58).

**Insurance Cover**
Preparedness should also include checking insurance cover, for example insurance loss adjusters think replacement costs are around £6-£7 per book (59) which is obviously much too low. “True replacement is an area that usually gets left out of insurance calculations and can be very costly” (60). Ashman again provides a useful checklist (61).

**2.43 Reaction**
Information on disaster reaction should be contained in a document which clearly defines the staff members who should be contacted in an emergency. A set of clearly defined reaction procedures should be set out. They may be listed on an emergency information sheet posted by telephones. It should include procedures for raising the alarm and the first people who should be contacted. More detailed information should be collected together concerning identification of priority areas, contact details of key
personnel in support services, contact details of all disaster team members and salvage guidelines. The American Institute of Conservation have produced a checklist of what to do in a disaster (62). ASLIB's *Disaster Planning for Library and Information Services* provides details on calling tradesmen, carrying out safety checks, improving ventilation, sizing up the situation and identifying options for salvage if material is water damaged (63). The British Library's publication (64) is also useful, if a little dated. McIntyre has a flow chart which is a useful summary of the procedures to follow after a disaster (65).

Previous liaison with the emergency services will prove valuable in a disaster situation, for example after a fire the building can stay hot and delay re-entry for over a week (66). If the need for rapid salvage of library materials has already been explained, arrangements can be made more easily.

The sequence of events following raising the alarm and calling out the designated members of staff should include:

**Safety Checks:** The disaster area should only be entered when it is safe to do so, safety is the top priority, staff should not be endangered for the sake of objects (67). Particular care should be taken if flood waters are involved as they may be contaminated with sewage.

**Improving Ventilation:** If damp materials are left for more than 48 hours in temperatures above 21°C then mould growth is inevitable (68). Doors and windows should be opened to increase air circulation and the heating should be turned off. It is important to monitor the environment: hygrometers, hygroscopes and thermometers should be used (69).

**Damage Assessment:** Information required includes the nature and extent of the damage, whether water is contaminated (and by what), whether the stock is secure and the resources and back-up facilities likely to be needed. Assistance may be required from subject specialists, conservators and outside salvage contractors. Ashman lists useful guidelines on building a salvage team (70). Basically it is necessary to make sure all members of staff on the salvage team have access to toilet and washing facilities and that they are given breaks every 1-2 hours in a designated rest area.
They should also be fully briefed. It may be useful to provide laminated information sheets kept in disaster trolleys.

Salvage

Fire
Records charred or damaged by soot are stable and can be treated many years later (71). Books will need treatment if smoke they are smoke damaged as the smell can be overpowering. Rapid treatment is also vital if the soot contains acids (72).
Fire is most destructive to computer magnetic tapes. Direct contact with flames or very high temperatures “reduces the chances of recovering data to virtually nothing” (73). Heat causes warping and layer-to-layer adhesion. A properly wound tape reel will, however, offer resistance to fire as it is a poor heat conductor. Computer tapes that have suffered the least damage should be salvaged first.

Water
Paper dated before 1840 absorbs more water than modern paper and is more vulnerable to mould growth. It can, however, remain submerged in water for longer. Bound volumes incur a lot of damage as the bindings do not swell as much as the text block which causes distortion. Once a path has been cleared in the disaster area the most important collections should be removed first. Priorities should be listed in the disaster control plan but other factors will be involved such as the amount of damage each area has sustained. Books on shelves may swell and become jammed. The wettest materials may be left until last as they will get no worse (74). Coated paper will stick together if air dried.

Data from magnetic tapes immersed in water is likely to be recoverable. Tapes can be air dried using a reel-to-reel device.

If microfilm is soaked, it should be kept wet. Containers filled with clean water should be used for storage.
Freezing

Most material can be frozen. Freezing is a good way of stabilising its condition.

"Freezing and storing records at low temperature is the most generally accepted and proven method of stabilising water-damaged paper records. This technique buys time for determining the best drying method and for carefully co-ordinating and controlling the drying operation" (75).

The first job in a salvage operation is to decide what material can be air dried and what frozen. This will be determined both by the type of material and the degree of saturation (76). Freezing can damage photographic materials as ice crystals can leave marks on the film. If drying cannot be arranged quickly, freezing may be the best option. Paper, leather, vellum, parchment and most photographs can be frozen safely. If in doubt, material should be frozen (77).

2.44 Recovery

The first stage in recovery is to arrange for material to be dried. With the exception of coated paper, lightly wet material can be air dried. Photographs, glassplates, discs and tapes can all be successfully air dried. No attempt should be made to air dry materials until reasonable drying conditions have been established. Air drying is suitable for a small volume of records. Penn offers detailed guidelines on procedures for air drying single sheets and bound volumes (78).

Commercially available methods of drying include freeze drying and vacuum drying. Freeze drying involves putting records into a chamber which keeps them frozen. A vacuum system then reduces the air pressure to near-absolute vacuum. Ice then vaporises without becoming liquid, a phenomenon known as sublimation. Freeze drying reduces stains and odours and virtually prevents inks feathering (79). In vacuum drying air is evacuated from the chamber until the temperature reaches freezing. The chamber is then filled with hot dry air until the wet material is warmed
to 10°C, when the chamber is cooled. This process continues until the material is dry.

The method commercial firms use to dry similarly damaged material varies so it is worth liaising with them prior to a disaster occurring. Thorburn rejects freeze drying as “the universal panacea for flood damaged paper and books” saying that it is more cost effective to replace books from a modern collection (80). She also highlights the positive aspect of a disaster which is that it allows the collection to be updated.

It may be worth calling in a team of expert conservators. One firm claims that restoration of 35,000 books can be completed in under 5 weeks and that in the very worst cases only 2% of book are lost due to charring and water damage (81). The importance of employing reputable companies and liaising with them before a disaster is highlighted by Green whose library suffered smoke damage. They experienced many problems with the poor quality of service they received from the specialist disaster recovery firm called in and expressed “frustration at the apparent incompetence of the supposed experts” (82).

Insurance assessment should also be arranged. The claim should be supported by documentation including a report on the condition of materials, proposals for their treatment and a record of treatment given (83).

Repair work should be carried out and destroyed items such as equipment and furnishings should be replaced.

Once the library has been made safe and stable, material should be returned to the shelves. A rehabilitation period of six months at 35-45% relative humidity has been recommended. Once back on the shelves material should be randomly sampled to check for mould growth.

2.45 Other Aspects of Disaster Control Planning
The computer system is very important to an organisation; it has been commented that
50% of companies go bankrupt if their computer systems are down for over a week (84). Adequate back-ups of data should be taken, a very small percentage of tapes tested by a commercial firm actually worked first time (85). Back-ups should be made daily and kept off-site.

People can be forgotten in a disaster. An arson attack, for example, has been compared to a bereavement (86). One computer firm which had suffered a fire had a plan for the computer systems to be up and running in 24 hours. After 3 weeks sales staff were not earning commission and had no access to their client files or offices. Staff illness rose to 30% and 2 and a half years later, the company went under (87). Full briefings and tours of the disaster area can improve staff morale (88). A disaster plan should be evaluated and tested. Distributing copies of the plan and conducting training sessions increase the likelihood that plans will work when needed (89).

2.5 Conclusion
Disaster Control Planning has become an important concern in many library and information services. The existence of a disaster control plan is vital for identifying priorities, making prior arrangements with specialist firms, convincing management of the need for adequate resourcing and for use in training. A disaster control plan should contain four main sections: prevention, preparedness, reaction and recovery. Prevention information includes threats to the library, security, the risk from fire, the risk from water, staff awareness and liaison with other departments. Preparedness involves drawing up the plan, designating key personnel, liaising with supplies, collecting any equipment to be held in-house, training staff and checking the insurance cover is adequate. Reaction information should list precise procedures to be followed and give guidelines for salvaging material. Recovery involves the treatment of damaged material and the restoration of equipment and services.

This chapter has focused on key issues in disaster planning, further details can be
found in the literature.

A disaster control plan obviously cannot stop disasters occurring, what it can do is prevent some and minimise the effects of others. A good disaster control plan can save a lot of time and ultimately money. In order for a plan to be effective senior managers must recognise the importance of disaster control planning in relation to other management activities in libraries.

2.6 Notes and References

8. Eden *et al*, ref. 4, p. 72.
12. Eden *et al*, ref. 4, p. 72.
13. Ibid., p. 72.
16. Anderson & McIntyre, ref. 3.
18. Eden et al., ref. 4, p. 72.
22. Adapted from McIntyre, ref. 2, p. 2.
23. Ibid., p. 2.
24. Ibid., p. 2.
26. Ashman, ref. 17, pp. 6-7.
29. Ibid., p. 2.
31. Ashman, ref. 17, p. 10.
32. Penn, ref. 27, p. 32.
33. Ibid., p. 150.
34. Matthews, ref. 9, p. 279.
35. Penn, ref., 27, p. 150.
36. Ibid., p. 151.
37. Matthews, Graham. Disaster management: controlling the plan. *Managing*
38. Elliott, ref. 10, p. 112.
39. McIntyre, ref. 2, p. 3.
40. Adapted from Tregarthen-Jenkin, ref. 15, pp. 28-29.
41. Ashman, ref. 17, p. 11.
42. Elliott, ref. 10, p. 113.
43. Ashman, ref. 17, p. 17.
44. McIntyre, ref. 2, p. 2.
46. Ashman, ref. 17, p. 18.
47. Thorburn, ref. 21, p. 76.
48. Penn, ref. 27, p. 150.
49. McIntyre, ref. 2, p. 4.
52. Matthews & Eden, ref. 50, p. 34.
55. Tregarthen-Jenkin, ref. 15.
56. Ashman, ref. 17.
58. Thorburn, ref. 21, p. 76-78.
63. Ashman, ref. 17.
64. Tregarthen-Jenkin, ref. 15.
65. McIntyre, ref. 2.
66. Ashman, ref. 17, p. 25.
69. Penn, ref. 27, p. 155.
70. Ashman, ref. 17, pp. 31-33.
71. Penn, ref. 27, p. 154.
72. Green, ref. 57, p. 75.
73. Penn, ref. 27, p. 159.
74. Ashman, ref. 17, p. 29.
75. Penn, ref. 27, p. 156.
76. McIntyre, ref. 2, p. 6.
78. Penn, ref. 27, pp. 154-160.
79. Penn, ref. 27, p. 157.
80. Thorburn, ref. 21, p. 77.
82. Green, ref. 57, p. 75.
83. Ashman, ref. 17, pp. 45-46.
86. Thorburn, ref. 21, p. 76.
87. Donnelly & Heaney, ref. 84, p. 71.
88. Thorburn, ref. 21, p. 76.
3.1 Introduction

3.1.1 What Is Hypertext?

The simplest definition of hypertext (1) is that it consists of chunks, or nodes of information and the links between them. Using this definition any text with references, such as this one, would be included. The text and the one referred to are the 'nodes' and the reference forms the link. This is the intellectual basis of hypertext. What distinguishes hypertext from printed text is that the links are "machine-supported" (2). When a link is selected, movement between the two nodes takes place automatically. Hypertext allows the nodes to be any size and there are no limits on what can be linked to what. A node can consist of text, graphics, film or even a piece of music.

3.1.2 A Brief History of Hypertext

Using the definition of hypertext from section 3.1.1 many early texts could be seen as the beginning of hypertext. What is considered by most authors to be the birthplace of hypertext is Vannevar Bush's famous article "As we may think", written in 1945 (3). He discussed the problems associated with the growing volume of information. He designed, theoretically, the 'memex', a device

"in which an individual stores his books, records and communications, and which is mechanised so that it may be consulted with exceeding speed and flexibility" (4).

As well as a store for information, the memex was based on
"associative indexing, the basic idea of which is a provision whereby any item may be caused at will to select immediately and automatically another. This is the essential feature of the memex. The process of tying the two things together is the important thing" (5).

Bush thought, as many authors still do, that linking items together was important because it mimicked the mind which

"operates by association. With one item in its grasp, it snaps instantly to the next that is suggested by the association of thoughts in accordance with some intricate web of trails carried by the cells of the brain" (6).

Although Bush is credited with the theory, Ted Nelson first coined the term 'hypertext'. Nelson’s Xanadu project aims to create a ‘docuverse’ which will link all the world’s literature together in a “universal, instantaneous hypertext publishing network” (7). Xanadu has some important features. Firstly nothing ever needs to be written twice; documents are made up of ‘transclusions’ from other documents, of which they are themselves a part. Secondly, each transclusion is virtual, each document contains links to the original document, rather than copies of its parts.

The more simple idea of linking all the world’s literature was described by H.G. Wells in 1936. A World Encyclopaedia would

“...spread like a nervous network...knitting all the intellectual workers of the world through a common interest and a more conscious co-operating unity” (8).

Another well known worker on hypertext is Doug Engelbart. He developed NLS (oNLine System) a computer based environment containing many forms of document and allowing planning and communication. McKnight et al see NLS as one of the earliest attempts to provide a hypertext environment in which collaborative work could
Bush, Nelson and Engelbart have 3 quite different views of hypertext, which demonstrate that hypertext is not a single concept:

- Bush believes hypertext mimics the mind and because it is 'natural' should be easy to use.
- Engelbart's idea is that hypertext should make the user able to achieve more with it than without it.
- Nelson's idea is that hypertext is a storage and retrieval mechanism. The user should be able to access any document.

So, hypertext has not been an 'overnight' success. The idea of linking all the information available in the world has been around since at least 1936. Hypertext systems have been developed by research groups since the 1960s. Where recent developments have occurred is in the enabling technology, that is, the computer. Bush believed that microfilm would provide the technology for his memex, but it was not until powerful computers became widely available that hypertext and its potential could begin to be fully explored.

3.1.3 The Importance of Hypertext

Hypertext has received much attention for a number of reasons. Firstly it is because it offers new and potentially powerful ways of organising and accessing information. It could even "alter the way in which we read, write and organise information" (10).

Secondly, information technology is becoming increasingly important, McKnight et al point to the strong growth in information and information related jobs from 1961-81 compared to a decline in jobs unrelated to information (11). Hypertext has also been hailed as the replacement for the book:

"In a decade or so, the book as we know it will be as obsolete as is movable type today" (12).

It is ironic then that much of what is written about hypertext, including this
dissertation, is presented in a traditional paper based form. Certainly at present it is difficult to see how hypertext will ever take over from the book in terms of convenience. McKnight et al see the book as being around for many years and ask “when is it better to present the information via hypertext rather than via paper?” rather than speculate on when books will become obsolete. In the context of this dissertation, it is the aim to illustrate the problems and advantages of a hypertext version of a disaster control plan rather than aim to replace a paper version completely (13).

3.2 Issues in Hypertext

3.2.1 Non-Linearity

“One of the strengths of hypertext, but also a potential source of weakness, is that it is essentially a formless medium” (14).

There is much agreement in the literature about the characteristic which gives hypertext its potential importance in offering new ways of structuring information; it is the ‘non-linearity’ of its node and link structures. Linear structures are seen as being constraining and a poor way of presenting information. Hypertext has been favourably compared with ‘linear’ paper based texts (15). The paradox of presenting students with lineal communication, presentation and instruction, and expecting them to see the world as an inter-related system has been discussed (16).

The acceptance of the linearity of written texts has also been questioned (17). Some aspects of the way written language is used are in fact non-linear. The idea that hypertext can loosen constraints on the way ideas are presented, accessed and even conceived is also controversial. McKnight et al argue that this last claim assumes a direct relationship between the linearity of language and how arguments are constructed as linear chains of cause and effect (18). If this were true, they say, then either we think associatively and there is a poor fit between the tool and the user, or technology serves us badly because it forces us to think linearly. They question both
the premise and conclusions. Human communication is a very complex technology. They use speech to illustrate their argument: speech is linear in that it is produced and heard chronologically and instantaneously. Words are one-dimensional because they are uttered in sequence and the sound disappears almost immediately. The underlying structure of oral communication is rarely linear and meaning is constructed in an iterative fashion. Written language appears highly linear because words are represented in successive sequences. Parts of written language are non-linear, a table is a good example. Also few books, outside fiction, are read, or written, in a linear fashion. They conclude that linearity is therefore a characteristic of the media of language not of the messages they convey.

It could also be argued that hypertext is not truly 'non-linear'. Even if the reader is encouraged to choose their own way through a text, they still follow a serial route as only one node can be accessed at a time. Hypertext simply offers different pathways. In most hypertext systems, links are added by the author, so any path a reader takes will already have been anticipated and exploring is not therefore unrestricted.

3.2.2 Navigation and Hypertext

"The user’s freedom, to browse, navigate and take part in a journey or voyage of discovery at will, is the most distinguishing feature of hypertext" (19)

In spite of this navigation is “the single greatest difficulty for users of hypertext” (20). Much has been written in the literature, and the mass media, about ‘getting lost in hyperspace’ (21, 22). Basically being lost in hyperspace means not knowing how information is organised, how to find particular information, and if that information is available at all!

Amongst the most obvious reasons why users get ‘lost’ is the lack of standardisation of organisation of hypertext documents. Readers are used to books having contents pages at the front, indices at the back and chapters structured around themes. Due to their previous experience readers know all this before they even open a book. Studies
have shown that sticking to a well known convention of organisation helps readers understand the structure of a document and that readers can accurately put paragraphs into the correct chapter headings (23). Also relative positions such as 'before' and 'after' are useful in a written text. None of these are generally true for hypertext systems as different hypertexts are structured differently.

The extent to which users experience navigational problems with hypertext is controversial. McKnight et al note the problem of the circumstantial and anecdotal nature of the evidence used to support claims of navigational problems (24). The size of the system may be important, in a small one navigation may not be a problem, but in a large one, navigational aids may be required (25).

A hypertext document does not necessarily give an indication of size, quality, contents, age or usage. Research has shown that users of hypertext tend to return to the menu if they take the wrong path whereas users of paper are happier to scroll through text to find an answer. The strategy of returning to the menu must be inefficient as it interrupts a train of thought and has been attributed to users' unfamiliarity with hypertext (26).

It is also worth considering the difference between browsing and navigation:

“Browsing is where an idea is followed using the linking mechanism of the hypertext elements...Navigation involves the use of a graphical aid such as a browser or map to show an overall representation of the nodes and links” (27).

There are five discernible search strategies:

- Scanning: covering a large area without depth
- Browsing: following a path until a goal is achieved.
- Searching: striving to find an explicit goal.
- Exploring: finding out the extent of the information given
- Wandering: purposeless and unstructured globetrotting (28).
These categories can be used to describe three different ways of using text: scanning and exploring are used to get an overview of an application, browsing is following a train of thought and searching is following an idea to a node or dead end. Wandering is said to have no place in hypertext, interestingly this paper was written well before the advent of the Internet and the activity of ‘surfing the Net’.

With all this knowledge of the problems of navigation and the way users browse and navigate through a hypertext how can navigation be made easier? Following the book metaphor, an index and contents page could be included. This has the important advantage of familiarity to users who should find them straightforward to use. One study found that a contents page was more helpful than an index in giving users an overall view of the system (29). Common sense would suggest that an index, of good quality, would be useful in finding factual information. Another study found that making the contents page and index ‘active’, that is allowing readers to jump straight to the text they required, increased navigational ability (30). Benest reports the advantages of sticking to the traditional book format (31). Graphical browsers or maps of the information space are seen by Conklin as a feature of an “idealised hypertext system” (32). They can be useful, but if they are too detailed it may be possible to get lost in the navigational support system (33)! Query or search mechanisms could also be provided.

A problem noted by Conklin is that of “cognitive overhead” (34). This occurs when a reader is presented with a large number of choices of links to follow. It can be compounded by ‘informational myopia’ if the label in the link does not give enough information for the reader to decide whether to follow it. There are many other possibilities for navigational aids but they vary between systems and it would seem sensible to exploit the familiarity that most users have with the way that traditional linear texts are structured.

3.2.3 Hypertext and Learning

Hypertext does offer a different way of presenting information. In a teaching context
it offers the opportunity to build-in video, sound and graphics. The advantages of this for subjects such as drama and the life sciences are obvious. Learner control is another important advantage of hypertext. Authors can 'hide' layers of information that can be accessed by links. This allows users to find information up to the level of detail they require.

In studies comparing hypertext and paper-based texts, hypertext has been suggested to be different in certain areas: speed, accuracy, preference and comprehension (35). Recent studies have shown that any speed advantages that paper may have over hypertext are reduced if the electronic text is of a high enough quality (36). Accuracy varies according to the text used. A preference for paper-based texts should decrease once users become more used to hypertext systems. Whether or not comprehension is enhanced is not clear from the literature. One study found that

"the hypertext computer study guide is as effective an instructional medium for students...as measured by recall and retention of information, both factual and inferential" (37).

while another found that

"If it is critical that students learn the details of material in a document, the instructor cannot rely on the student to hypertext through the document and acquire it; linear formats should probably be retained" (38).

It seems clear that rather than 'wandering' through a hypertext, users should have clear aims. A fair evaluation of how users learn from hypertext is only likely to be possible when test subjects are hypertext literate and have developed navigation and browsing skills.

3.2.4 Information Storage and Retrieval

"The principle focus of hypermedia design is not education, but the
efficient retrieval of information and entertainment” (39).

As already mentioned in section 3.1.3, hypertext is a very powerful way of organising and accessing information and could change the way we organise information. Conklin (40) notes the ease with which references can be created and traced. The computer supported nature means that all references are equally easy to follow either forward to their referent or backwards to their reference. The consistency of information is also important, references can be embedded in their text so that even if the text is moved the link still provides direct access to the reference.

Electronic texts generally have the following useful characteristics:

- **Ease of access**: many readers can access the same text immediately and simultaneously via a network.
- **Lengthy texts** can be easily searched and manipulated, even included in other documents.
- **Readers** can be confident that they are reading the most recent version of a document. This may be an advantage for the average reader but could cause problems for anyone requiring historical information on previous versions of a document.

### 3.2.5 Structure of the Document

Hypertext can have many advantages in structuring information contained within a document. As Nelson envisaged (see section 3.1.2), ideas can be expressed with less overlap and duplication as the same pieces of text can be referenced from several different places. The organisation of information within a document is much more flexible; both hierarchical and non-hierarchical organisations can be imposed on unstructured information, there is even scope for multiple hierarchies to organise the same information. Conklin considers these points in greater depth (41). Problems encountered include the fact that a single line of argument will probably take up more than a single paragraph. The choice for the author is to either present each paragraph separately which makes it harder to present a coherent argument or to use electronic scrolling which Whalley rejects on the grounds that it defeats the “ergonomic gains
3.3 HTML and the World Wide Web

3.3.1 A Brief History (43)
The Internet began in the late 1960s as a military experiment in the design of computer networks. It became available to a few people with the advent of modems but it was not until 1993 that the Internet really "took off". This meteoric rise can be attributed to a number of events. Firstly, the infrastructure was made available by the government funded computer networks being opened up to nearly unrestricted traffic. Secondly, many of the original Internet members made much of their documentation available for free. This was still not enough as the Internet consisted mainly of academic information available as plain ASCII text. The most important development for the spread of the Internet was the advent of the World Wide Web (WWW). Physicists working at CERN, the European Particle Physics Laboratory, released an authoring language and distribution system which included a HyperText Markup Language (HTML). Students and staff at the National Centre for Supercomputing Applications (NCSA) wrote a web browser called Mosaic. Mosaic could not only read new HTML documents but also the older FTP and Gopher organised documents. In the last three years the Internet has "spawned and entirely new medium for information exchange and commerce" (44). The power of HTML extends beyond commercial sectors: serious informational pursuits can benefit. Publication no longer takes weeks or months, rather the blink of an eye and students have access to many of the great libraries of the world.

What is the Internet made up of? Basically, it connects two kinds of computers: servers and clients, which display documents. To view HTML documents a browser is run on the client and it retrieves its information from a server. The requests for information are all formatted according to the HyperText Transfer Protocol (HTTP). One of the useful features of browsers is that you do not actually have to be connected to the WWW for them to be able to view HTML documents. You can simply open
3.3.2 What is HTML?

"HTML is a document-layout and hyperlink-specification language"

(45).

The theory behind HTML is that all documents have a number of features in common, such as titles and paragraphs. It instructs a browser how to display a document by using "tags". Tags are used to mark headings, paragraphs, lists, quotation, tables and a limited number of font attributes. There are also tags for including images in a document and for including hypertext links to other documents. The location of a document is specified by a Uniform Resource Locator (URL). A URL will create a link to almost anything including images and film clips. The combination of this versatile URL and the structuring language of HTML is very powerful as a means of creating a web of hypertext documents and linking them to the outside world.

3.3.3 Limitations of HTML

HTML has many limitations, most of which are based on its relative simplicity as a programming language. It does not describe page layout, headings for instance are simply "heading 1" with no definition of the font or size of text. The earliest versions of HTML included only very simple elements such as paragraphs, headings and lists. Newer versions (HTML 3.0) offer more sophisticated elements such as tables. As Valente has noted, it is not possible with HTML to use pop-up text boxes which could be useful for the definition of specific terms for example (46).

3.3.4 Advantages of HTML

Even though it is very simple and limited in terms of display and formatting, HTML has a number of advantages. By excluding descriptions of the layout and appearance of a document, it is relatively quick and straightforward to change the appearance of a document. Simplicity also means that HTML can be read by all the different browsers operating on the WWW; HTML documents are device-independent.
Simplicity also means that each HTML document is small so it can be transferred over the Net as fast as possible. HTML has many advantages for the author. The first is that because it is so simple HTML is very quick to learn, a few hours are long enough to learn the basics. It is also very easy to transfer text to hypertext. McKnight et al. note that it took 40 hours to convert 17 pages of text into hypertext (47)! With HTML all you need is a file saved as plain text to which you simply add the HTML tags.

3.4 Conclusion

The theory behind hypertext has been around for a long time, it is only recently, with the rapid development of the computer that it has become possible to fully implement many of these ideas. Hypertext has a variety of features such as non-linearity and navigation which have both advantages and disadvantages. Hypertext offers many new and exciting possibilities for the storage and retrieval of information. It also offers opportunities to enhance the media available for learning. HTML, through the WWW, has become the most common form of hypertext in just a few years. HTML is basically a very simple language, a feature which brings with it advantages such as ease of use, but also has limitations in what can actually be produced. The Internet and the World Wide Web have already begun to change the way we store and retrieve information and only time will tell whether hypertext will fulfil the more ambitious predictions such as making the book obsolete or even forming an extension of the human brain as Vannevar Bush imagined fifty years ago.
3.5 Notes and References

1. Hypermedia is a more general term than hypertext and suggests links to other media. McKnight et al point out that hypermedia is often misused as ‘multimedia’ (ref. 2, p. 2). They also note that traditional ‘text’ contains other media such as pictures and tables and so in line with this the term hypertext will be used here to mean a document containing several media.

2. McKnight, Cliff, Andrew Dillon & John Richardson. *Hypertext in Context*, 1991, p. 3. This publication provides a comprehensive summary of many of the issues involved in hypertext research.


4. Ibid.

5. Ibid.

6. Ibid.


10. Ibid., p. 6.

11. Ibid., p. 5.


13. McKnight et al, ref. 2., p. 6.


16. McKnight et al, ref. 2., p. 16.

17. Ibid, ref. 2., p. 17.

18. Ibid, p. 16.

19. McAleese, ref. 15, p. 6.

20. McKnight et al, ref. 2., p. 65.

20(9), pp. 17-41.

22. McAleese, ref. 15.
23. See McKnight et al., ref. 2, for a discussion.
24. McKnight et al., ref. 2, pp. 66-67.
26. See McKnight et al., ref. 2, for a discussion.
27. McAleese, ref. 15, p. 7.
28. Ibid., p. 7.
32. Conklin, ref. 21, p. 29.
33. McKnight et al., p. 80.
34. Conklin, ref. 21, p. 40.
40. Conklin, ref. 21, p. 40.
41. Ibid, p. 38.
42. Whalley, ref. 14, p. 9.
43. This section has been written using information taken from Graham, Ian S. *The HTML Sourcebook*, 2nd ed., 1996 and Musciano, Chuck & Bill Kennedy, *HTML: the definitive guide*, 1996.
44. Musciano & Kennedy ref. 43, p. 3.
45. Ibid., p. 7.
47. McKnight et al, ref. 2, p. 89.
Chapter Four - Development of Pilkplan

4.1 Existing Documentation

The Pilkington Library's disaster control plan was in the early stages of planning when this dissertation began. One member of staff, Marion Shields, had been given the responsibility of coordinating all disaster control planning efforts and producing a written plan. Some documentation had already been produced:

- A preliminary planning document called "Disaster Planning" contained a list of aims of the disaster control plan, ideas about risks to the library, resources required, safety checks and information about different areas of the library stock including the computer system.

- "Draft Notes for Disaster Plan" contained ideas about what broad areas should be included in the plan. As a draft document it is not comprehensive in its coverage, but it does contain detailed information about electricity, fire prevention, security, protection and storage of stock, building design and guidelines for both a disaster handbook and a directory of products and services. It also lists items the library itself should hold.

- There was also some documentation containing detailed information about specific areas of the library stock. Information was available for both Special Collections and the computer system. Information on Special Collections (written by David Lewis) was concerned with what material is present and its location. Also discussed was how priorities should be established. Documentation for the computer systems was more detailed. It included procedures to follow if different areas of the library and university were affected, what information different servers contain, nightly switching off procedures for computer equipment, recommendations for better prevention and measures already taken. It also contained some information on replacement of both computer hardware and information such as CD-ROMs.
• Also documented were questions that had been put to the University's Estates staff and the Insurance Officer. The former included calling out Estates staff, checking of alarm systems and material the library should hold. The latter looked at what exactly is covered by the University's insurance policy including replacement and hiring of equipment following a disaster.

• A document entitled "Disaster Management Plan" contained detailed instructions for teams involved in a disaster reaction situation. It forms the basis of the Disaster Team Instructions (instruct.htm) in Pilkplan (see 4.4.11, below).

• "Guidance on salvage operations after a disaster has occurred" provided detailed information about the effects of water on paper and guidelines on how it should be removed from the disaster area and the best methods available for drying damaged material.

• A copy of the "Fire and Emergencies Manual" on disc.

4.2 Disaster Control Planning Information

As the existing documentation was still fairly loosely structured and not comprehensive, the literature concerning disaster control planning was consulted as discussed in Chapter 2. Disaster control plans from other organisations proved particularly useful. Using a combination of guidelines from the literature and information already written by Shields, Pilkplan began to be constructed.

Additional information about particular areas of the library stock was gathered by conducting a series of semi-structured interviews with members of the library staff with responsibility for particular areas of the library stock (samples of these interviews are contained in Appendix C). Questions were asked about what material types are held in each part of the collection, how easy items would be to replace and also if priorities for salvage could be established.
4.3 Learning HTML

Learning HTML is relatively simple. I found that after only a few hours of reading a basic text book (1), I was able to create simple hypertext documents. There are many sites on the Internet about writing HTML, books are listed in the bibliography and Web sites in Sources of Further Information (further.htm), in Pilkplan, and Appendix E. There are also guidelines in the literature on how to design web pages which proved useful as a source of ideas (2). It is important to set the goals of a web page before beginning to design it.

4.4 Designing Pilkplan

The aim of Pilkplan was to create an information resource which would be capable of collecting together different forms of information and making it easy to cross refer between documents. It was also hoped that it would be easier to link together material such as sources of further information and contact details of other organisations such as specialist disaster recovery firms. Another aim of Pilkplan was to raise the profile of disaster control planning, at least partly, by providing an easy to use resource for consultation by all members of staff which outlines procedures for particular situations, including reporting faults.

HTML's simplicity makes it easy to learn, but is can be limiting in what it allows the author to do. Another limitation was the fact that much of the information that was already available was in the form of long texts. It was decided to stick to a design which consisted of a series of files, each with an active contents page at the beginning so that if readers only wanted certain information they could jump straight to it. It was also anticipated that the inclusion of all the text on a particular topic in one document would make navigation easier as fewer links would be required. It would also allow a reader to scroll through all the information on a particular topic without having to jump from file to file and risk getting 'lost'. Although the use of scrolling has been criticised, Valente for example (3) suggests that it is the "computer equivalent of having to turn over pages while following a route on a road map". Even
for the floorplans, it was felt that users would be familiar with scrolling so it would not prove too problematic. Many web pages use this method of organisation. It was anticipated that increased familiarity with the Internet in the last year would mean that users would be happy with this method.

The structure of web pages is extremely variable. Due to the linear nature of much of the existing documentation it was best to use a combination of linear and hierarchical structure as shown in Appendix B.

At the end of each section of each document the option to return to the contents of that particular document was given. Also at the end of the contents list an option was given to return to the 'Pilkplan Homepage'. It was hoped that this would make it easy for users to return to the index if they took a wrong turn. Returning to 'Pilkplan Homepage' was also given as an option at the end of each file as it was envisaged that this would help users who were scrolling through the text to return to the index without having to scroll back up or use the 'back' button.

The HTML files were created by a combination of re-keying some of the documentation and converting the information contained on disc into plain text and adding HTML tags.

4.4.1 Pilkplan Homepage (index.htm)

The Pilkplan Homepage is the introductory page to the system. It lists the objectives of the disaster control plan which are taken from "Disaster Planning" in the existing documentation. The active list of contents has been changed throughout the development of Pilkplan. Initially links were included to the main files such as 'Disaster Prevention', 'Disaster Preparedness', 'Disaster Reaction', 'Disaster Recovery' and the 'Disaster Recovery Handbook'. More links have been included to 'Sources of Further Information', 'Pilkplan Information', the 'Fire and Emergencies Manual' and the floorplans. This was mainly due to the problems I was having remembering how to find particular sections of information! I realised that if I was having navigational
problems then so would the average user, unfamiliar with the information. The inclusion of these links was anticipated to make information retrieval easier as it does not require the user to follow a complex train of thought or understand what information terminology, such as 'preparedness', includes.

4.4.2 Disaster Prevention (prevent.htm)

This file was created by using guidelines from the literature to reorganise information contained in the existing documentation. A large part of it is taken from "Draft Notes for Disaster Plan" and from the questions put to the University's estates staff. The section on threat analysis is taken from McIntyre (4). This topic is seen to be important in the literature but as yet no formal information has been gathered so in keeping with the one of the aims of creating Pilkplan, that is creating an information resource, it was decided that rather than leave the section out it was more useful to list areas which should be included. It was hoped that this would assist future planning.

4.4.3 Disaster Preparedness (prepare.htm)

This section includes contact details for back-up and specialised services taken from their promotional material. There are three areas where information is not yet available. The first is that of listing the disaster reaction teams which is obviously beyond the scope of this dissertation and requires managerial decisions to be made. A link was also provided to the 'Disaster Team Instructions' so that not only team members but also their responsibilities could be identified. The second area is the section on areas of priority. Guidelines have been included from the literature as again policy decisions are required before priorities can be listed in rank order. A link was provided to the 'Pilkplan Information Page' as it was felt that information about each part of the collection would be useful in setting these priorities. The final 'gap' in the information is key personnel and contact details which again requires decisions to be made before it can be included.
4.4.4 Disaster Reaction (react.htm)

This section is very limited as it has not yet been addressed by any decision makers. A list of sections to consider has been provided. The link to the 'Pilkplan Information' page has been included as some of the areas of the library have disaster reaction information that is relevant to that particular area. This will be discussed in more detail in section 4.4.8.

4.4.5 Disaster Recovery (recover.htm)

This section is extremely limited as again decisions need to be made. A list of sections which should be considered in the planning stage have been included from the literature.

4.4.6 Disaster Recovery Handbook (handbook.htm)

This section is a modified version of the existing "Disaster Recovery Handbook". Changes made have included the addition of the active contents page to follow the same pattern as other Pilkplan files and to improve information retrieval. The home telephone numbers of members of library staff have been removed as they were concerned about security. Links to other documents have also been added. The 'Fire and Emergencies Manual' contains procedures to be followed and so has a link to it. Following the listing of all the disaster reaction teams a link is provided to the 'Disaster Team Instructions' to provide more details on each of their responsibilities. Originally links were created from each team in the list to the relevant instructions for that team but this proved to require too many links to return to the 'Disaster Recovery Handbook' which was anticipated would cause navigational problems. A link has been created to the 'Pilkplan Information' page to provide details about particular areas of the library collection. A link has also been provided straight to the floorplan, rather than accessing it through the 'Pilkplan Information' page as it was envisaged that it might be useful for a user to go straight to a location map. The floorplan also provides an easy method of access to the 'Pilkplan Information' page. Another
interesting feature of the handbook is that the new HTML command <table> has been used. This could cause problems as some browsers, such as Winweb for example, do not recognise it and display the information as a long line of information. As Pilkplan is intended for local use only and as the Pilkington Library uses Netscape, this was not envisaged to be too problematic.

4.4.7 Fire and Emergencies Manual (fireman.htm)

The 'Fire and Emergencies Manual' is simply the contents of the file on disc saved as plain ASCII text with HTML tags added. One of the problems with it was that much of the original text was typed in capital letters. At first I began to change the capitals to either bold or italics. As this required the text to be re-keyed it was very time consuming. I decided to leave half of the file as it was originally and see if any of the evaluators filling in a questionnaire commented on things such as how hard it was to read.

4.4.8 Sources of Further Information (further.htm)

The inclusion of some kind of bibliography or way of collecting together sources of information was originally seen as one of the most useful aspects of a hypertext disaster control plan. Links to other sites on the Internet have been created. This could cause problems if users explore other sites and find it difficult to return to Pilkplan. This is a problem with many web sites as links cannot be created to allow the user to return to the original page. The only option was to rely on the users' ability to use 'back' on Netscape's button bar. A short note advising users of this was written at the top of the page. Links to sources of further information on disaster control planning and HTML information are relatively straightforward. More interesting from a user's point of view are the links to books contained on the Pilkington Library's web OPAC. The links take the user straight to the exact page related to the book they are interested in. This brings with it all the features of being able to see if a book is in the library or on loan. The user can even reserve it.
section of general information has also been included. It was felt that the location of the Pilkington Library in relation to the rest of the campus would be useful so a link to an image map of the campus has been included. A link has also been included to the Pilkplan Information page as it was anticipated that a user requiring information about a particular area of the collection might choose to look in the 'Sources of Further Information' file.

### 4.4.9 Pilkplan Information (pilkinfo.htm)

This section is key in fulfilling the aim of creating an information resource. Its source is a combination of interviews conducted with members of staff with responsibility for particular parts of the collection, information already documented and notes Marion Shields has made since this dissertation began. I felt it was important to use some kind of standardised format in presenting the information available on each area of the collection. Information was collected on the following subject headings: location, material held, format types, disaster prevention information, disaster recovery information, priorities and general information. I felt it would be useful to have one place where information on separate areas was collected together as this could help in both increasing awareness of what the library held and would provide the basis for making decisions about priorities. In some disaster situations it may even be useful on the day as a source of reference for people involved in a recovery operation. The amount of information collected together on different sections is, at present, very variable. Information for the archives, special collections and the computer systems is very detailed. The first two contain a lot of detail about what types of material are held. Information for the computer system is particularly interesting as it contains procedures for action depending on the area of the library affected and the scale of the disaster. The fact that the author of this information, Simon Tanner, was previously responsible for writing a disaster control plan for another organisation is likely to have played a large part in this.

Each of the separate sections has a link to the 'active' map as it was felt that viewing the location of a particular area of the library stock would be useful for a user not
familiar with the library, such as members of external organisations either when liaising in the preparedness stages of drawing up a disaster control plan or even in the reaction and recovery following a disaster.

There is also a section containing general information which contains information about other notable areas of the library collection and figures for details such as the average cost of a text book and annual expenditure on books and journals. This sort of information was anticipated to be useful in planning when dealing with the Insurance Officer. It was included in Pilkplan Information as this seemed the most likely place users would look for it.

4.4.10 Level 3 of the Pilkington Library (map.htm) and the Larger "Clickable" Map (map2.htm)

The floorplans of the library are contained in small.gif and medium.gif, how they were created is discussed below. When displayed on the screen some of the text on the smaller map was not very clear. The map was however the correct size to fit on the screen without the need for too much scrolling. It was decided, therefore, to include a larger version which had active areas that could be clicked on to view information about that particular area. It was decided that to make it less confusing, the index would contain a link to the inactive map only so that the user could 'get their bearings' before looking for more information on the larger map. Problems envisaged included the time it took for the images to load so a note was included at the top of the larger image to warn users that it could take a while to load.

Creating the Images

An image of the floorplan of level three of the library was scanned in and saved as a bitmap (.bmp) file. A program called LView was used to convert the bitmap file to a GIF file (.gif) which HTML can recognise. Originally, the image was going to be edited using Paintbrush but this proved too time consuming so Gary Brewerton, Systems Analyst, created a new image, using the scanned in image as a template, in
Corel Draw. Once the size of the image had been decided (a variety of sizes had been saved in Corel Draw) it was then loaded into Adobe's Page Mill which generates the coordinates of polygons and circles that are compatible with HTML. These coordinates were added into a piece of HTML code to make them active and refer to a particular section of the 'Pilkplan Information' page. It was decided that the best way to make the parts of the map which are 'clickable' obvious, was to make them coloured.

4.4.11 Disaster Team Instructions (instruct.htm)

This file contains instructions for teams involved in a disaster reaction. They are taken from the existing documentation "Disaster Management Plan". Originally it was decided that it would be useful to have links to each separate section, such as sorting teams, from other files. It was soon obvious that this would make the list of links at the end of each section too long and complex and users would be unsure which file they had come from.

A link to 'Disaster Preparedness' is included to allow users to return to the section on disaster reaction teams without having to use the 'back' button. Some information has not been covered such as the exact procedure for removing books, once again this requires managerial decisions to be made. Two links are included to the 'Sample Discard/Damage Sheet'. It was anticipated that it would be useful for disaster reaction team members to be able to view these sheets for training purposes.

4.4.12 Sample Damage/Discard Sheet (damage.htm)

Originally, the idea of this file was to scan in a copy of the Damage/discard sheet so that copies could be printed off in a disaster situation. It was soon decided, however, that because of problems such as creating an exact match in terms of size, it was as effective for training purposes to simply use the HTML 'table' command which showed the essential features of the sheet. It was assumed that there would be plenty.
of copies available for use in a disaster situation. The headings of the table columns were created in consultation with Marion Shields. Having the same sheet for both damage and discard purposes would, I assumed, be simpler in terms of the production of copies and also when items were to be discarded simply crossing out the word damage at the top of the sheet would save staff repeatedly writing out the word discard.

4.5 Notes and References

Chapter Five - Evaluation

Pilkplan was being evaluated throughout its development via the feedback I received from both my supervisor and Marion Shields. A more formal evaluation was conducted with members of the Pilkington Library staff, and students from the Department of Information and Library Studies at Loughborough University. It was hoped that it would be useful to compare users with limited knowledge of the library, particularly disaster control, with members of the library staff as Pilkplan is intended for use by both new and experienced users in disaster control planning. Nine people, 4 staff and 5 students, completed evaluation forms containing a list of questions and a questionnaire (see Appendix D); all use the WWW more than once a week.

The users were given four questions about aspects of the Pilkington Library's disaster control plan, varying in level of difficulty, which they were asked to answer using Pilkplan. They then filled in a questionnaire asking for their opinions on Pilkplan. The users were also asked if they had any experience of disaster control planning. A follow-up interview was carried out with Marion Shields to discuss the content of Pilkplan.

5.1 Navigation

As already mentioned in section 3.2.2, "navigation is the single greatest difficulty for users of hypertext" (1). The author of a hypertext document has to anticipate how it will be used in order to create appropriate links. HTML browsing software incorporates navigation tools, such as the 'back' and 'forward' buttons in Netscape, but it is considered good practice to incorporate links of this type within the document. Links were included at the bottom of each document to the homepage (index.htm) and to the contents list at the top of that document. The option to return to the contents
list was offered at the end of each section of the document. Other links were included as described in 4.4.1 - 4.4.12.

All nine users thought it was at least easy to move around Pilkplan and 5 thought it was very easy. There were no differences between the staff and student groups. Navigation was not much criticised, 2 users found that there were enough links that took them to where they wanted to go. Only one user had problems with navigation. She felt there were too many links; "I just didn't know where I was at some stage" - the classic problem of navigation! The lack of problems users had with navigation could be due to their familiarity with the WWW. As one user noted, it was difficult to estimate how much the ease with which she navigated Pilkplan was due to her familiarity with other hypertext documents. The fact that this group of WWW literate users had so few problems with navigation could suggest that with increasing familiarity with the WWW and hypertext in general this disadvantage will become less significant. As discussed in section 3.2.2 the reason readers have few problems with navigation with books is due, at least in part, to their familiarity with common structural features such as the index and contents page. This evaluation suggests that as conventions have developed in HTML documents navigation is becoming easier.

Three of the nine users felt that it could not have been any easier to move around Pilkplan. The other six offered surprisingly similar ideas on how navigation could have been improved. Three users suggested the use of a search engine which had links to it from every page. Even though he suggested it, one user felt that including a search engine was unnecessary for a document of this size. Another idea suggested by two of the student users was to use standardised button bars. One suggested using 'frames', available with HTML 3.2, which make links permanently available on the screen. A simpler idea was to include a graphic next to the links to make them more easily recognisable.

Interestingly the only file without a contents list and links to it within the text, the Fire and Emergencies Manual (fireman.htm), was criticised for lacking these features. The existing navigational aids must therefore be useful. As anticipated the capital letters
in the Fire and Emergencies Manual were found to be hard to read.

Eight out of the nine users thought that the links mostly lead them to where they expected to be. This supports the idea that, for these WWW literate users at least, navigation is not a big problem.

5.2 Information Retrieval

The use of a search engine would improve the ability of users of Pilkplan to retrieve information as discussed in section 5.1, above. Netscape has a 'find' tool which can be used to search a single page which two members of the library staff used. Four of the nine users found the answers to all four of the questions. Four found three, and only one found just two of them. Finding the answer to the first question was straightforward users simply had to read the contents list (index.htm) and go to Sources of Further Information (further.htm). The second question required users to go to the Pilkplan Information page (pilkinfo.htm) and find the archives section. It was anticipated that some users would go to the floorplans to find the archive and find the information that way. No one commented on not being able to do this (the archive is on Level One of the library, and so not included in the floorplans), but one user did note that 'floorplans' implied that all the levels of the library were included.

Question three caused some confusion. In the existing documentation there is some degree of repetition between different documents over who should be contacted in the event of a disaster. This showed up when users were asked to name two members of the library staff who should be contacted in the event of a fire. Eight of the nine users found answers, but they were from different sources. Most used the Disaster Reaction Handbook (handbook.htm) but three looked in the Fire and Emergencies Manual (fireman.htm). One user noted that in addition to the Fire and Emergencies Manual he also looked in Disaster Preparedness, (prepare.htm) under the Key Personnel heading, but the information was not available. The only user not to find this information also looked in Disaster Preparedness, but assumed that this was the only
place the information would be. This is interesting from the point of view of retrieval; information should not be repeated and must be structured logically so that users do not assume that information is simply not present. One user noted that it was useful that there was more than one way to find information. This supports the idea that hypertext allows the reader greater freedom to explore the information.

The fourth question was made deliberately hard to find, even so five users found the answer to it. Four of these users simply scrolled around the text to find the answer. The other user who found the answer used the 'find' command on Netscape after unsuccessfully scrolling through the text. It is interesting that all the users seemed relatively happy to scroll through the text, even though this method has been criticised (2).

All the library staff found it easy to answer the questions. There was more variability amongst the students; one found it very easy, two easy and two difficult. Amongst the criticisms made, the theme of the subject headings not containing what the users had thought they would recurred. As one user said "...headings seemed sensible enough but the information required didn't seem to be there when I got there". Again, the structure of the information is important in information retrieval. Unfortunately in some cases, the information simply was not available at the time of creating Pilkplan. The Pilkplan Homepage (index.htm) was also criticised. Users felt that it should have contained more description of what each link contained so my worries about including too much information on the contents list (see section 4.4.1) were unfounded.

Three of the users had previous experience of disaster control planning. In all cases this took the form of being responsible for writing a disaster control plan for an organisation. There were, however no differences between their responses and those of the other users. In fact the only student user with disaster control planning experience had the most trouble in finding the answers.

The only discernable difference between the responses of student and staff users was
how easy they found it to answer the questions. As mentioned above, two students had difficulty in finding answers to the questions.

5.3 Floorplans

The floorplans were evaluated by only seven of the users as they didn't work on the earlier versions of Netscape that two of the library staff had (this in itself presents a problem). Of these seven, two thought the floorplans were easy to use, and the remaining five thought they were very easy to use. The users were all very positive about the floorplans, comments included "nice graphics", "I really, really liked this aspect of the design" and "very flash". Even the users who were not able to use them thought the idea was a good one. This indicates that the use of graphics to show information is one of the most important features of Pilkplan. There were, however, a few criticisms. The major one was the time the graphics took to load, particularly the larger map (map2.htm). Basically, the larger the computer's memory and the less applications running on it at the same time, the faster the images load. In fact the two library staff who were able to evaluate the floorplans were using fairly powerful computers and neither mentioned that the loading time was a problem.

The only other criticism came from one of the library staff who thought that the small image (map1.htm) was too small and some of the text was therefore unclear. This is in contrast with Marion Shields who, in the follow-up interview asked why both had been included as the small one was more than adequate! Using one graphic of a size somewhere between the two would solve this problem but defeat the whole point of including the smaller image which was included was to give an overview of the library layout

5.4 Hypertext v Paper

In a longer study, it would have been useful to undertake a formal comparison of a
paper version of the Pilkington library's disaster control plan with Pilkplan. As a paper version does not at present exist, it was felt that the problem of creating a paper version which could be fairly compared with Pilkplan was prohibitive and beyond the scope of this dissertation. Problems such as restructuring the information so that the links made sense would have been considerable.

User's were asked if they prefer paper-based or hypertext documents. All the student users said that they preferred paper but three of the four library staff preferred hypertext documents. The six users who preferred paper documents gave a variety of reasons for this:

- Paper documents are portable.
- There is no need to wait for graphics to load.
- Browsing is easier in a paper document.
- Computer screens cause eye strain.
- It is easier to take in the scope of a paper document and be sure that you haven't missed out any information.
- It is easier to make notes on paper based documents
- Paper documents are easier to use for demonstration purposes as they are available immediately; there is no time required for loading.

The three users who preferred hypertext gave the following reasons:

- Hypertext documents are available on-line so are much quicker to find; a book has to be found on a shelf.
- Searching is quicker with hypertext than looking through an index.
- Printing from on-line documents is easy.
- Hypertext is easier to amend and update than paper.
- Hypertext is convenient for users who are using a PC all day.
- It is easier to create and store back-up copies of hypertext documents.

The different opinions of these two groups of users appears to be related to the reason for consulting the document. The users who prefer hypertext tend to require quick answers to questions and do not need to look at all the text. The paper preferring users seem to need to browse through information to make sure they have covered it
all. It seems that hypertext documents are viewed as being quicker to use, whereas paper is more convenient for browsing, particularly of long sections of text. One hypertext preferring user wrote that in spite of his overall preference, it depended mainly on what he wanted a document for. He also felt that not many documents get much added value by being in a hypertext form.

All the users felt that in some cases hypertext is more useful than paper. The advantages were seen to be:

• Hypertext allows documents to be linked together which allows important points to be followed without using an index.
• Hypertext makes moving around documents easier.
• Hypertext avoids the limitations of a linear structure.
• A well designed hypertext can allow the selection of relevant material from a large document.
• Graphics, such as the floorplans, make information more memorable.
• Documents which are referred to may only be a click away.

5.5 Content

Although some of the documentation included in Pilkplan, is still very much in the planning stages, it was decided to evaluate the contents of Pilkplan. As so few people are familiar with both disaster control planning and the issues local to the Pilkington library itself it was decided that the best method would be to carry out a follow-up interview with Marion Shields. In her interview, she said that although some areas had been skated over, Pilkplan is after all a prototype so this is to be expected. Areas she did feel need addressing are:

• Staff training.
• The content and location of disaster trolleys.
• The creation of two publications, one for general circulation and another for selected members of staff.
• The creation of a page of brief step-by-step instructions on action to be taken in the event of a disaster.

Most of the gaps in the information are simply because managerial or committee level decisions are required to be made on many areas. Details for each section are discussed in 4.1.1 - 4.1.12.

5.6 Presentation

Users were asked to make general comments about Pilkplan. Their criticisms were all concerned with the presentation of Pilkplan:

• The homepage should contain only one link per item in the contents list.
• The Fire and Emergencies Manual should have an active contents list to reduce the amount of scrolling necessary and no capitalised letters.
• The appearance of each page is very similar; some way should be found to differentiate between them.
• The general presentation could have been made more graphical.

5.7 Notes and References

Chapter Six - Recommendations for Further Development of Pilkplan

6.1 Creating a Search Engine

The inclusion of a search engine is perhaps the most obvious way of improving information retrieval in Pilkplan (1). It would be easier to use than Netscape’s ‘find’ option, because it searches more than one page of information at a time, saving the user having to search each document in turn. If users were to rely too heavily on a search engine to find information, then it would not be using hypertext in the truest sense, that is, the user would not be following a chain of ideas through the document. In the context of this dissertation, however, the aim is not to create an ideal hypertext system but to create an information resource that enables users to find information quickly. It is likely that the inclusion of a search engine would greatly improve information retrieval, particularly as so many of the users studied in the evaluation suggested one (see section 5.2). There are packages, both commercially available and free, which can index pages on a web server which could be used. Another method of including a search engine is to use a general search engine, such as Alta Vista. The engine will index your pages if you give it the URL of your homepage. Then a page needs to be set up which searches the engine but limits the search to only your pages. Adding a search engine would be possible if Pilkplan were put on the library server.

6.2 Including ‘mailto’ tags

It would be useful for users of Pilkplan to be able to contact the various people listed via email. The only ‘mailto’ tag included at present is for Marion Shields in Disaster Prevention, under the staff guidelines section. Mailto tags for the following should be included:
• Staff responsible for different areas of library stock.
• Staff from other departments, such as the Estates Office and the University Insurance Officer.
• External advisers, such as the National Preservation Office. Obviously, liaison would be necessary before such inclusions but it would be extremely useful from the point of view of users, particularly if they are using Pilkplan for planning purposes, to have such specialist back-up support.

6.3 Using the ‘form’ element

The ‘form’ element makes it possible to display a fill-in form on the screen. Fill-in forms, especially for detailed information such as the reporting of faults, would make users structure the information they give. It would simplify their job and that of the person who receives such details. In order for the information inputted into a fill-in form to be processed by the server, a gateway programme would be necessary. This recommendation will therefore only be of use if Pilkplan was put on the library server, perhaps with some means of limiting access to it.

6.4 Extending Sources of Further Information

The Sources of Further Information page could be greatly expanded. It was the aim of this page to demonstrate what could be done. One of the most useful features from a users point of view are the links to the books on the Pilkington Library’s Web OPAC. Users can check whether the book is on loan and can reserve it. Only two titles are included at present as the long URL is time consuming to type in. The length of time should not, in the future, prohibit the inclusion of more titles as the benefits to the user are obvious. The references given in the text could also be made active and linked to a bibliography.

The HTML information given could be greatly expanded upon, as there are many web
sites on how to write HTML. It would be useful for details to be given of what each site covers so that users are not jumping blindly to external sites which may take some time to load. This would require a member of staff to evaluate each site for its usefulness which could be time consuming, but would provide a useful source of reference for whoever is responsible for updating Pilkplan.

It could be useful to have a link to other sources of library information, such as acquisitions which the Talis system does have. The technical details of how to achieve this would be fairly complicated unless areas such as acquisitions were included on the TalisWeb OPAC. For security reasons this may not be possible.

6.5 Restructuring of Information

Some of the information is still relatively disorganised. The format of the disaster recovery handbook, in particular, could be changed to a step-by-step guide. It could perhaps take the form of questions such as “What do I do if...?” This could make what is essentially a very ‘dry’ subject more interesting which has obvious benefits for staff training purposes. It would also be interesting to see if two separate handbooks should be produced, one brief guide for general circulation and another containing more detailed information for members of staff with particular responsibility for disaster control.

An interesting way of presenting procedures is the use of a flow chart. These are well developed in the literature (2) and could easily be adapted to be relevant to the Pilkington Library. Due to the basic nature of HTML, flowcharts would need to be scanned and saved in a .gif format which HTML can read. This would of course cause problems if the flowcharts needed updating as they would need to be re-scanned. However they should probably be included in spite of this because flowcharts are much easier to follow than lengthy text. They are also a way of providing step-by-step instructions that are very brief and could therefore be included in the brief handbook mentioned in the previous paragraph.
6.6 Changing the Contents Page

It is apparent, from the evaluation (see section 5.6), that more information could have been provided about what each section contained. The list of contents could be changed so that there is only one link per item in the list which might make it clearer. The creation of the contents list was very much a compromise between elaborate description and brevity for ease of use. More emphasis should be placed on providing more detailed information.

It may also have been useful to provide an index, with each item made active. This could have advantages over a search engine because it would not require the user to be aware of suitable search terms. It would require a considerable amount of work to create a very detailed index. Instead an index of subject headings could be provided, similar to the Windows help features for example.

6.7 Increasing the Amount of Graphics

The floorplans were certainly the most popular aspect of Pilkplan (see section 5.3). On the basis of this more graphics could be included. Graphical symbols next to repeated instructions such as "return to Pilkplan homepage" could prove useful in helping users to navigate more quickly.

It is possible to include a variety of media in HTML. Most useful in Pilkplan would be information pages on members of staff, including photographs. It may also be useful to have information about their particular role should a disaster occur contained on their information page. This would be useful in training new members of staff but would also be useful for existing members of staff as graphics tend to be more interesting than text alone and listing each person's responsibilities could make Pilkplan a useful source of reference.

For training purposes it would be useful to include graphics such as video clips of disaster areas or at least photographs to illustrate the effects a disaster can have. The
main problem with graphics is the amount of space they take up. Video clips require a 'helper application' on the user's computer which help the browser to view video clips or sounds. Graphics do tend to be extremely slow loading, particularly on machines with a smaller memory, which some of the library staff have, so at present they would not be of widespread use. Photographs, though, could certainly be included easily. Photographs of damaged books and other media, salvage techniques and 'before and after' pictures of damaged libraries would help make Pilkplan more interesting and hence more popular and even more well used.

6.8 Developing the Floorplans

All levels of the library should be included. The Department of Information and Library Studies is situated on Level 4 of the library. In general, it is important that because of this shared occupancy all disaster control planning efforts are more carefully coordinated. More specifically, the layout of the department is completely different to the rest of the library building.

It would be useful to have numbered priorities on the floorplans for ease of reference. There could be difficulties associated with this such as making a numerical system work for priorities split between three or four distinct floors.

It is possible to create links between the floors either by clicking on a staircase or by clicking a button below the image to go either up or down a level. The benefits of this would mainly be presentational, users would find the graphics more pleasing to use.

6.9 Using More HTML Tags

With more recent versions of HTML, it is possible to create much more visually appealing pages (3). For example, HTML 3.0 offers the 'background' attribute to the
‘body’ element to indicate an image file that the browser should locate. This would make it easier to distinguish between different pages in Pilkplan.

As was suggested in the evaluation (see section 5.1) it is possible to create a standardised button bar, available with HTML 3.2, using the ‘frames’ tag. This would improve the appearance of the page and would also make recognition of navigation tools easier. This would of course be dependent on the library.

It is also possible to align an image in relation to text; the image can be displayed at either side of it and text can even flow ‘around’ the text.

6.10 Updating Pilkplan

Pilkplan has been created without using any text editors, but it is recommended that in the future they are used, particularly if long documents are to be converted into HTML format, as even less knowledge of HTML will be required making updating easier. Several small programs are available and are useful in the management of collections of HTML documents (4, 5).

6.11 Notes and References


Chapter Seven - Conclusions

This dissertation aimed to demonstrate the viability and usefulness of putting a disaster control plan into hypertext form. It was aimed to create a hypertext structure which would link all aspects of a disaster control plan in a meaningful and easy to use way. Creating a disaster control plan using HTML is viable. In fact, as detailed in Chapter Four, it is relatively straightforward. The main problem encountered was the lack of local (that is, Pilkington library specific) information available for certain areas such as disaster reaction and disaster recovery. For this dissertation this is not too problematic as it was only the aim to produce a prototype, but if Pilkplan is to be made full use of in the future, then it is important that its coverage is comprehensive, so managerial decisions about policy on areas such as priorities for salvage will have to be made. Also noteworthy is the fact that level four of the library building, where the Department of Information and Library Studies is situated, is not included in the disaster control plan. This raises the whole issue of shared occupancy in disaster management which is worthy of further exploration.

7.1 Staff Training

Marion Shields feels that the major use of Pilkplan is likely to be in staff training. The potential that this form of presentation has for the inclusion of a variety of media has obvious advantages over a paper copy. Perhaps the most useful advantage of a hypertext disaster control plan is that staff are interested in it. Marion Shields, in the follow up interview, said that Pilkplan gains people's interest: "If I'd have put a written copy on their desks it would have been lost amongst a pile of paper". She has also had favourable feedback from members of staff who were positive about viewing a 'dry' topic on screen. One member of staff took it onto the Enquiry desk to look at, whereas a paper version may not have seemed so appealing. The staff training angle
could be developed much further by including 'questions and answers' as discussed in section 6.5.

7.2 Information Management

Using HTML is a useful way of collecting together information on disaster control planning into a single information resource. Marion Shields is keen to develop Pilkplan in the future as she feels it will be easy to update. Once the person responsible for updating Pilkplan is familiar with HTML (see section 4.3 for details) it will certainly be easier. An additional benefit is that users can be sure that they are viewing the most up-to-date version. Certainly this will become increasingly true as more and more HTML editors are used. HTML is relatively easy to maintain, provided that regular checks are carried out on areas such as the Sources of Further Information page which contains links to external Web sites which can change regularly.

7.3 Information Storage and Retrieval

The evaluation found that Pilkplan was easy to use and that it could be used in effective information retrieval. The inclusion of a search engine would increase the value of Pilkplan in retrieval of information as discussed in section 6.1. As yet all aspects of a disaster control, as discussed in Chapter Two, have not been incorporated into Pilkplan but the potential for their inclusion has been demonstrated.

7.4 Usefulness of Pilkplan

The usefulness of a hypertext plan on the day of a disaster is questionable. If a major disaster occurred and the whole library were affected, then Pilkplan could be viewed on a laptop PC. A paper based version would have big advantages because of its portability. It would also be more cost effective as a number of laptops could be
required to take into different areas. If a disaster affected only a small area of the library then Pilkplan could be used on a normal PC but Marion Shields still feels that generally a printed copy, possibly laminated, would be more useful in a disaster situation.

Indeed it is not, and should not be, the aim of Pilkplan to replace a paper copy of the disaster control plan, which will obviously be more immediate. Rather, it is to provide a resource which collects together all the information available in an easy to manage way.

It is hoped that Pilkplan will provide a useful framework for planning in the future which may best be carried out by a committee.

There a variety of benefits which have become apparent during the course of this dissertation. Primarily they are due to the increased awareness that members of staff have of disaster control planning. Also because of the technical nature of writing HTML, there would be closer links with the computer systems staff. Marion Shields feels that it has been useful to have deadlines imposed by the timescale of this dissertation as this aspect of library management often gets 'put on a back-burner' while more immediately important work is carried out.

7.5 Finally

Pilkplan has therefore been proven to be a viable, useful, meaningful and easy to use way of linking together all aspects of a disaster control plan. With some changes and improvements it has the potential to continue to have these features and much more, but much depends on the commitment of senior management to the importance of both disaster control planning and Pilkplan.

Within the timescale it has proved impossible to include everything, both in terms of
content and features of HTML. The aim of demonstrating advantages and disadvantages has, however, been realised. A much more in depth evaluation is required; this dissertation is best viewed as a pilot to further work that should be undertaken.
This bibliography is divided into two sections: disaster control planning, and hypertext and HTML. This is because there is no overlap between the two subject areas and, it is anticipated, the sources will be easier to find with this arrangement.

**Disaster Control Planning**


*Crisis and Drama? Disaster planning and management in the 1990s,* one day seminar held at Welford Place, Leicester, 28th Feb. 1996.


Green, Kevin. The case of the Pilkington Technology Centre fire. *Aslib Information*, 1993, 21(2) pp. 72-75.


Matthews, Graham & Paul Eden. *Disaster management and British libraries*.


Hypertext and HTML


Gould, J. D. *et al*, Reading from CRT displays can be as fast as reading from paper. *Human Factors*, 1987, 29(5), pp. 497-517.


Musciano, Chuck & Bill Kennedy. *HTML, the definitive guide*. Bonn: O'Reilly, 1996.


Appendix A - How to View Pilkplan

All the relevant files are contained in the directory 'Pilkplan' on the enclosed disc.

1. Copy the directory Pilkplan to the hard drive of your computer.
2. To view 'Pilkplan' you need a browser such as Netscape or Microsoft's Internet Navigator. The maps will only be 'clickable' on recent versions of Netscape such as Netscape Navigator 2.0.
3. Open the browser software and open the file 'index.htm'. This is the starting point for 'Pilkplan'.
Appendix B - The Files and Links in Pilkplan

- Disaster Prevention (prevent.htm)
- Disaster Preparedness (prepare.htm)
- Disaster Reaction (react.htm)
- Disaster Recovery (recover.htm)
- Disaster Team Instructions (instruct.htm)
- Damage/Discard Sheet (damage.htm)
- Level 3 of the Pilkington Library (mapl.htm)
- Larger "Clickable" Map (mapl.htm)
- Pilkplan Information (pilkinfo.htm)
- Disaster Preparedness Information (pilkinfo.htm)
- Pilkplan Homepage (index.htm)
- Fire and Emergencies Manual (firemen.htm)
- Disaster Recovery Handbook (handbook.htm)
- Sources of Further Information (further.htm)

External Websites
Appendix C - Sample Interviews

Only two interviews with members of the Pilkington Library staff are included here. The first, with Jenny Clark, the Archivist, is similar in format to the interviews conducted with both David Lewis, Cataloguing Manager, and Mary Morley, Sub-Librarian. The second, with Simon Tanner, Library Systems Manager, is included because its format was different from the others due to the nature of computer systems.

Interview with Jenny Clark, University Archivist, 14/6/96

What material is contained in the Archive?

The list of what the Archive contains is held in ordinary files. Jenny Clark will look at the possibility of copying it and storing it at another location, either in the Pilkington Library or elsewhere.

The Archive contains:

- Official University papers; signed minutes. They can be obtained online. Minutes taken since Loughborough became a University could be obtained from other sources. The signed minutes (i.e. the copy held in the Archive) would be required for any legal case. From this point of view, they are irreplaceable. The signed minutes have no actual monetary value.
- Other administrative working papers.
- Photos from the University dating back to World War I.
- University publications; a complete set (theoretically). The odd copy could be obtained from other sources.
- Small collections from former staff and students.
- The Dan Maskell Collection: photographs, letters and programmes. It may have some monetary value as Dan Maskell is a well known figure.
- A newly acquired collection from John Lucas (from the English Department): contains correspondence, unpublished plays and poetry by modern poets.
- A 17th Century copy of a letter by Walter Raleigh.
What types/formats of material are held in the Archive?

- Paper (fairly poor quality).
- 2 or 3 parchment documents
- Photographs
- Slides
- Cine film
- Sound recordings, including gramophone records, magnetic tape and cassettes.

Can any priorities be set at present?

Of high priority are:

- Early photographs.
- Early 20th Century laboratory notebooks.
- Parts of the Dan Maskell Collection, e.g. letters.
- Early college brochures from the 1920s and 30s.
- The Raleigh letter.
- Engineering drawings, housed in metal filing cabinets. These are not yet listed; once they are, priorities can be decided.
- The signed minutes.

Of low priority:

- Other administrative working papers.

Is there any other information that is of relevance to disaster control planning?

- The door to the Archive is not a fire door and the lock can be opened by the master key. Marion Shields is trying to change both the door and lock.
- Material is stored in archival standard boxes which proved effective protection in the Norwich Library fire.
Interview with Simon Tanner, Library Systems Manager, 4/6/96

This interview was very informal, the following points arose:

- Simon’s policy is that replacement is preferable to recovery. Instead of a 286 PC, the insurance would cover for a new 486.
- If a disaster occurred in the library all that would be lost would be hardware.
- Both the systems and computer rooms are fairly isolated.
- There are about 60 networked CD-ROMS in the library. They would either be replaced or the next one in the subscription could be waited for.
- Computing Services and the library keep back-ups for each other which are at the most 3 weeks old.
- There is a fire safe which contains important information.
- Simon noted that some companies can recover information from warped computer hard drives.
- Overheating could be a problem. Overnight temperatures should not rise too much but during the day the sun can make the room very hot. The computer room needs blinds. CD-ROM drives have already been lost through this type of overheating.
- A halon fire extinguisher would be effective.
Appendix D - Sample Evaluation Form

Questionnaire

This questionnaire should take no longer than 30 minutes. Please browse through "Pilkplan" and use it to answer the following questions.

Your name: ______________________________________________

Questions

The aim of these questions is to determine how easy "Pilkplan" is to use to find information. If you already know the answer please try and find the relevant information using Pilkplan.

1) Name a source of information for writing HTML documents.

2) Name 2 areas of high priority held in the University Archive.

3) Name 2 members of library staff who should be contacted in the event of a fire.

4) How should electrical equipment be protected from smoke damage?
Questionnaire

Your Comments

The following questions allow you to answer briefly but it would be helpful if you could be more specific where possible.

General Questions

1) Do you prefer using paper based documents or hypertext ones?

   Paper-based  □   Hypertext  □

   Please give reasons for your answer:

2) Do you agree that in some cases hypertext is more useful than paper?

   Yes  □   No  □

   Please give reasons for your answer:

3) How often do you use the Internet/World Wide Web?

   Less than once a month  □   Once a week-once a month  □

   More than once a week  □
Pilkplan Questions

4) How easy was it to move around Pilkplan?

   Very easy □  Easy □  Difficult □

   Comments:

5) How easy was it to find answers to the questions asked?

   Very easy □  Easy □  Difficult □

   Comments:

6) Did the links lead to where you expected them to lead?

   Mostly □  Sometimes □  Hardly ever □

   Comments:

7) Is there any way it could have been made easier to move around?

   Yes □  No □
If yes, how?

8) How easy were the floorplans to use?

   Very easy □    Easy □    Difficult □

Comments:

9) Do you have any other comments or suggestions for improving Pilkplan?
   (Please continue on the back of this sheet if necessary)

Thank you for your time.
Appendix E - Useful HTML Web sites

There are many sources of information available on writing HTML documents. It may be useful for the absolute beginner to read an introductory text such as Lemay, Laura. *Teach yourself Web publishing with HTML in a week.* Indiana: Sams, 1995. Once the basics have been learnt, the best advice is to copy HTML from other sites. There are many Web sites that cover HTML and related topics, the following is simply a selection that I have found particularly useful or comprehensive (URLs correct on 2/6/96).

- A Beginner's Guide to HTML  
  (http://www.ncsa.uiuc.edu/General/Internet/WWW/HTMLPrimer.html)

- Introduction to HTML and URLs  
  (http://www.utoronto.ca/webdocs/HTMLdocslNewHTML/intro.html)

- HTML Quick Reference  
  (http://kuhttp.cc.ukans.edu/lynx_help/HTML_quick.html)

- Web Mastery  

- (The New) Mag's big list of HTML editors  
  (http://sdg.ncsa.uiuc.edu/~mag/work/HTMLEditors/)